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First Named Inventor:	WHEATLEY, JOHN A.		
Application No.:	09/911532	Group Art Unit:	2872
Filed:	July 24, 2001	Examiner:	Ricky D. Shafer
Title:	POLYMERIC INTERFERENCE FILM		

BRIEF ON APPEAL

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23 April 2004
Date

Signed by: Stephen C. Jensen

Dear Sir:

This is an appeal from the final Office Action dated 11/18/2003. Applicants filed a Notice of Appeal on or about Feb. 23, 2004 (by a certificate of mailing dated Feb. 18, 2004). This Brief is being filed in triplicate. Please charge the fee required under 37 CFR § 1.17(c) for this appeal to Deposit Account No. 13-3723.

REAL PARTY IN INTEREST

The real party in interest is 3M Company (formerly known as Minnesota Mining and Manufacturing Company) of St. Paul, Minnesota and its affiliate 3M Innovative Properties Company of St. Paul, Minnesota.

RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

STATUS OF CLAIMS

Claims 30, 32, 33, 34, and 35 are pending in the application. These claims all stand rejected.

STATUS OF AMENDMENTS

An amendment-after-final was filed Feb. 23, 2004 (by a certificate of mailing dated Feb. 18, 2004). That amendment canceled the then-pending non-elected claims and amended the remaining claims to take into account the cancellations. An Advisory Action dated 03/18/2004 indicated the amendment will be entered. Therefore, the claims listed in the Appendix take into account the changes made in the amendment-after-final.

SUMMARY OF THE INVENTION

The presently claimed invention (independent claim 30) relates to multilayer interference films that comprise alternating layers of at least a first and second diverse polymeric material. See the specification at e.g. p. 1 lines 3-7; p. 2 lines 12-16; p. 3 lines 8-26; p. 14 lines 14-25; and FIG. 1. See also FIGS. 2A, 2B, 3A, and 3B, which were introduced in an amendment filed on or about Aug. 26, 2003 and have been approved by the Examiner. The alternating layers have a refractive index mismatch in at least a first plane perpendicular to the film, and have layer thicknesses suitable to reflect light over a range of wavelengths. See the specification at e.g. p. 2 line 31 to p. 3 line 17; p. 4 lines 24-32; p. 15 lines 7-25; and FIG. 1. Further, at least one of the first and second diverse polymeric materials comprises a polymer selected from the group consisting of polyethylene naphthalate and a copolymer of ethylene naphthalate. See e.g. p. 11 lines 20-25 and p. 12 lines 33-35.

The invention (dependent claim 32) also relates to such films in which the first and second diverse polymeric materials have differing stress optic coefficients. See e.g. p. 3 lines 8-17, and p. 23 lines 8-16 of the specification.

The invention (dependent claim 33) also relates to such films in which the refractive index mismatch in the first plane is at least about 0.03. See e.g. p. 23 lines 16-17 of the specification.

The invention (dependent claim 34) also relates to such films in which the refractive index mismatch in the first plane differs from a refractive index mismatch in a second plane perpendicular to the first plane. See e.g. p. 23 lines 8-16 of the specification.

The invention (dependent claim 35) also relates to such films that also comprise a third polymeric material different from the first and second diverse polymeric materials, the third polymeric material forming an interior layer of the film or a surface or skin layer of the film. See e.g. p. 3 lines 18-30 and FIGS. 2B and 3B referred to *supra*.

ISSUES ON APPEAL

1. Whether the pending claims are obvious (per 35 U.S.C. § 103(a)) over U.S. patent 3,610,729 (Rogers) in view of U.S. Patent 4,756,953 (Utsumi) or U.S. patent 4,799,772 (Utsumi).

GROUPING OF CLAIMS

The appealed claims will stand or fall together. No admission, however, is being made with respect to the obviousness of the subject matter of the dependent claims with respect to the subject matter of the independent claims.

ARGUMENTS OF APPELLANTS

The Final Office Action *inter alia* rejected the pending claims under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 3,610,729 (Rogers) in view of U.S. Patent 4,756,953 (Utsumi) or U.S. patent 4,799,772 (Utsumi). Applicants respectfully contend that such rejection cannot be sustained.

Rogers is directed to a multilayered light polarizer (see the title). The polarizer has alternate layers of birefringent material and isotropic material (see e.g. col. 2 lines 21-23 and col. 5 lines 12-16), or of two different birefringent materials, one positive and the other negative (see e.g. col. 4 lines 27-32). The layers should have an optical thickness of substantially one-quarter the wavelength of a selected wavelength of light (see e.g. col. 1 lines 50-53). At the bottom of column 4, certain polymers including polyethylene-terephthalate ("PET") are identified as readily lending themselves to the inexpensive and suitable coextrusion process, and can be rendered birefringent by a subsequent stretch orientation step. Rogers notes that it is sufficient to stretch the multilayer sheet until the refractive index discontinuity is less for one polarization component than the orthogonal component (col. 5 lines 8-11). In an exemplary coextrusion embodiment (see the lower portion of

column 5), Rogers coextruded polystyrene and PMMA into a multilaminar sheet containing 250 alternating layers, each layer being one-quarter optical wavelength in thickness, and stretched the multilayer coextrusion approximately 3% at 30°C, just short of the fracture point, to demonstrate the orientted structure's ability to polarize light.

Utsumi '772, in contrast, is directed to films used for liquid crystal panel substrates, in particular for cells of liquid crystal panels (see e.g. col. 1 lines 1-11). These substrates can apparently be subjected to high temperatures, for example, when a transparent electrode is formed by vacuum evaporation (col. 1 lines 35-37) or for heat treatment to reduce the heat-shrinkage ratio (col. 3 lines 14-34). Utsumi notes certain problems in this regard when the substrate is a uniaxially stretched PET film, such as blooming of an oligomer leading to increased haze and problems with the lead wire of the device (col. 1 lines 26-44). Utsumi discusses advantages of using uniaxially high-oriented polyethylene naphthalate ("PEN") in such liquid crystal panel substrates, including much higher heat resistance than PET, thus producing no blooming of oligomer, and efficient weather resistance, tear strength, and degree of polarization. The PEN films of Utsumi appear to be monolithic, single layer films. The thickness thereof is not specified, but "usually is 10 to 250 μm" (col. 3 lines 43-45). The amount of stretching of the PEN films taught by Utsumi is 3 to 7 times (longitudinal, col. 4 line 5), 2.0 times (transverse, col. 4 line 6), 3.5 times (transverse, col. 4 line 14), 1.2 times (longitudinal, col. 7 line 18), and 4.2 times (transverse, col. 7 line 19).

Utsumi '953 is similar to Utsumi '772, except the PEN film is disclosed for polarizing plates which contain a dichroic dyestuff. The disclosed films are again apparently monolithic, single layer films. Similar or identical thicknesses and amounts of stretching are disclosed as in Utsumi '772

The Utsumi references show nothing more than that PEN is suitable for two particular applications—liquid crystal panel substrates, and polarizing plates which contain a dichroic dyestuff—where PET was used previously. These applications apparently used monolithic, single layer films, with thicknesses of usually 10 to 250 μm, and stretched the films from 1.2 times to 7 times. This is very different from the birefringent films of Rogers, where multiple polymers are coextruded before stretching, and each layer is made to have an optical thickness of only one-

quarter the length of a selected wavelength of light. The exemplary coextrusion embodiment of Rogers used stretching of only about 3%, which is tiny compared to the stretch ratios ranging from 1.2 to 7 for the Utsumi references. Nor does Rogers mention heat treatment of his birefringent films, which was problematic for PET in the Utsumi applications.

In view of the very different applications and corresponding different features and requirements of the Utsumi references relative to the Rogers reference, it is respectfully submitted that only with the benefit of impermissible hindsight would it have been obvious to use PEN in the multilayer films of Rogers so as to produce "a multilayer interference film comprising alternating layers of at least a first and second diverse polymeric material, the alternating layers having a refractive index mismatch in at least a first plane perpendicular to the film and having layer thicknesses suitable to reflect light over a range of wavelengths, wherein one of the first and second diverse polymeric materials comprises a polymer selected from the group consisting of polyethylene naphthalate and a copolymer of ethylene naphthalate" as set forth in pending claim 30. The coextrusion process raises additional considerations with regard to the coextruded materials that are not of concern when making a monolithic film. Rogers himself acknowledges that *certain materials* (one of which is PET) *readily lend themselves to the coextrusion process,* (col. 4 lines 71-75, emphasis added), meaning that other materials *do not* lend themselves to coextrusion. The Utsumi references provide no guidance about whether PEN would or would not readily lend itself to such process. At best, it might be argued that it would be *obvious to try* PEN in the construction of Rogers in view of the Utsumi references, but such a standard of course falls short of that required to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a). *See* In re O'Farrell, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988); In re Fine, 837 F.2d 1071, __ USPQ2d __ (Fed. Cir. 1988).

The final Office Action makes reference to "The Knowledge Generally Available To One Of Ordinary Skill In The Art", and to the analysis followed by the court in In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981), namely, that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, and the test of what the combined teaching of the references as a whole would have suggested to those of ordinary skill in the art. Applicants respond that they have *not* based their argument on the proposition that Utsumi ('953 or '772) cannot be bodily incorporated into the structure of Rogers,

even though that proposition is true. Rather, Applicants have adhered to the sound principle that each reference must be considered in its entirety, as it would have been considered by one of ordinary skill in the art, without engaging in picking and choosing informed by hindsight. The Utsumi references disclose the use of PEN films in two specific applications—polarizing plates containing dichroic dyestuff, and liquid crystal panel substrates—and discuss the benefits of such uses. The Utsumi references do not, however, teach or suggest that PEN can be used as a substitute for PET generally. Likewise, Rogers teaches certain materials can be used in his multilayer reflective polarizer (see e.g. col. 2 lines 50-75), but also teaches that only certain materials lend themselves to the coextrusion process (col. 4 lines 71-73). Thus, considering these references as a whole, one of ordinary skill would not have been motivated to combine them in a way to produce the invention of claim 30.

For the foregoing reasons, the rejection under 35 U.S.C. § 103(a) of pending claim 30 should be withdrawn. The obviousness rejections of the remaining dependent claims 32-35 (based on the same references) should also be withdrawn in view of their incorporation of every limitation of claim 30.

CONCLUSION

For the foregoing reasons, appellants respectfully submit that the Examiner has erred in rejecting this application under 35 USC § 103(a). Please reverse the Examiner on all counts.

Respectfully submitted,

23 April 2004
Date

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APPENDIX

PENDING CLAIMS

30. A multilayer interference film comprising alternating layers of at least a first and second diverse polymeric material, the alternating layers having a refractive index mismatch in at least a first plane perpendicular to the film and having layer thicknesses suitable to reflect light over a range of wavelengths, wherein one of the first and second diverse polymeric materials comprises a polymer selected from the group consisting of polyethylene naphthalate and a copolymer of ethylene naphthalate.

32. The film of claim 30, wherein the first and second diverse polymeric materials have differing stress optic coefficients.

33. The film of claim 30, wherein the refractive index mismatch in the first plane is at least about 0.03.

34. The film of claim 30, wherein the refractive index mismatch in the first plane differs from a refractive index mismatch in a second plane perpendicular to the first plane.

35. The film of claim 30, further comprising a third polymeric material different from the first and second diverse polymeric materials, the third polymeric material forming an interior layer of the film or a surface or skin layer of the film.